INSTRUCTION MANUAL

DISCRETE INPUT & NPN TRANSISTOR OUTPUT MODULE, 8 points each (High-speed Link System, independent I/O common)

MODEL **R7HL-DAC16ES**

BEFORE USE ....

Thank you for choosing M-System. Before use, please check contents of the package you received as outlined below.
If you have any problems or questions with the product, please contact M-System's Sales Office or representatives.

■ PACKAGE INCLUDES:

Discrete I/O module .....(1)

■ MODEL NO.

Confirm Model No. marking on the product to be exactly what you ordered.

■ INSTRUCTION MANUAL

This manual describes necessary points of caution when you use this product, including installation, connection and basic maintenance procedures.

POINTS OF CAUTION

■ CONFORMITY WITH EC DIRECTIVE

- Use dual-shield cables (Shinko Seisen Industry Model ZHY262 PBA) for the network. If it is not sufficient, use a ferrite core (Kitagawa Industries Model GRFC-13) for the network cable.
- The equipment must be mounted inside the instrument panel of a metal enclosure.
- The actual installation environments such as panel configurations, connected devices, connected wires, may affect the protection level of this unit when it is integrated in a panel system. The user may have to review the CE requirements in regard to the whole system and employ additional protective measures to ensure the CE conformity.

■ POWER INPUT RATING & OPERATIONAL RANGE

- Locate the power input rating marked on the product and confirm its operational range as indicated below:
  24V DC rating: 24V ±10%, approx. 40mA

■ GENERAL PRECAUTIONS

- Before you remove the unit or mount it, turn off the power supply, input signal and output signal for safety.
- DO NOT set the switches on the module while the power is supplied. The switches are used only for maintenance without the power.

■ ENVIRONMENT

- Indoor use.
- When heavy dust or metal particles are present in the air, install the unit inside proper housing with sufficient ventilation.
- Do not install the unit where it is subjected to continuous vibration. Do not subject the unit to physical impact.
- Environmental temperature must be within -10 to +55°C (14 to 131°F) with relative humidity within 30 to 90% RH in order to ensure adequate life span and operation.

■ WIRING

- Do not install cables close to noise sources (relay drive cable, high frequency line, etc.).
- Do not bind these cables together with those in which noises are present. Do not install them in the same duct.

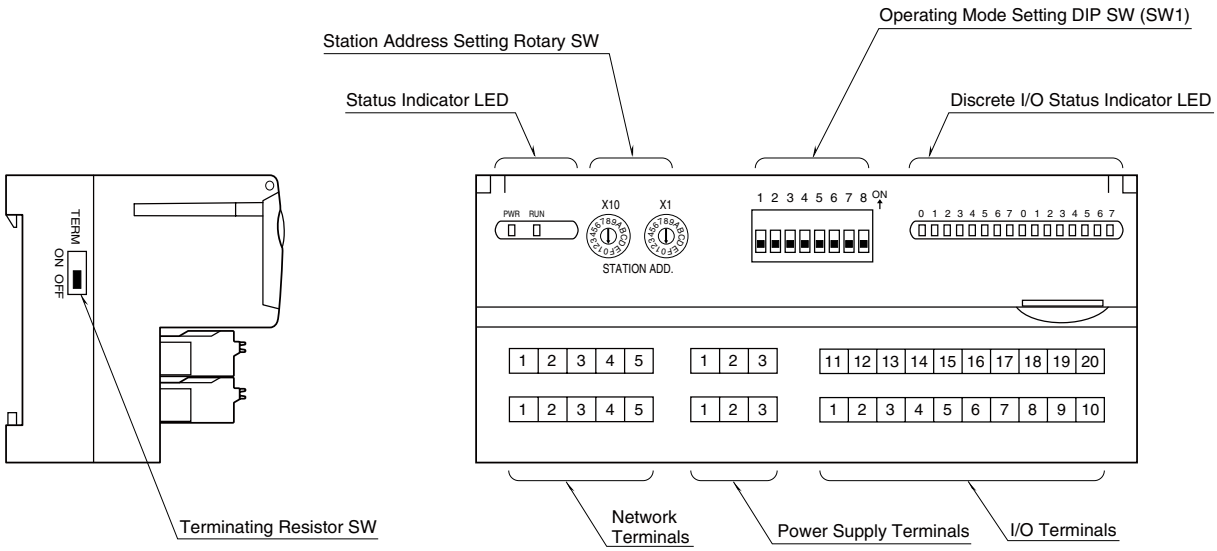
■ AND ....

- The unit is designed to function as soon as power is supplied, however, a warm up for 10 minutes is required for satisfying complete performance described in the data sheet.

COMPONENT IDENTIFICATION

■ SIDE VIEW

■ FRONT VIEW



■ STATUS INDICATOR LED

ID	COLOR	FUNCTION
PWR	Green	Turns on when the internal 5V is supplied normally.
RUN	Green	Turns on when the refresh data is received normally.

■ DISCRETE I/O STATUS INDICATOR LED

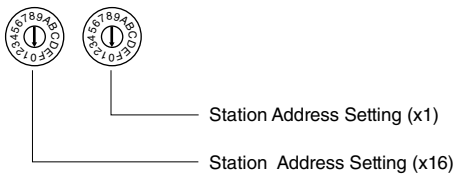
LED indicators shows the signal status.

ON : LED ON (red)

OFF : LED OFF

■ STATION ADDRESS

The left switch determines the sixteenths place digit, while the right switch does the ones place digit of the address. (Range: 01H to 3FH)



■ OPERATING MODE

(*) Factory setting

• Output at the loss of communication (SW1-7)

SW1-7	OUTPUT AT THE LOSS OF COMMUNICATION
OFF	Hold the output (*) (maintains the last data received normally)
ON	Reset the output (turned off)

• Transfer rate (SW1-8)

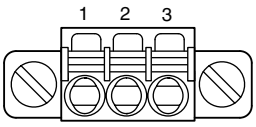
SW1-8	TRANSFER RATE
OFF	12 Mbps (*)
ON	6 Mbps

Note: Be sure to set unused SW1-1 through 1-6 to OFF.

■ TERMINATING RESISTOR

To use the terminating resistor, turn the switch ON, and OFF to invalidate. (Factory setting OFF)

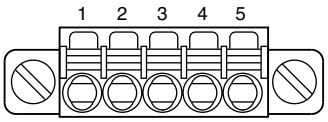
■ POWER SUPPLY TERMINAL ASSIGNMENT



NO.	ID	FUNCTION, NOTES
1	+24V	Power input (24V DC)
2	0V	Power input (0V)
3	FG	FG

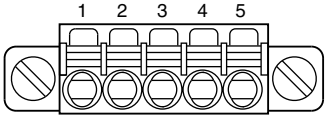
■ NETWORK TERMINAL ASSIGNMENT

• Full-duplex communication



NO.	ID	FUNCTION, NOTES
1	RXD–	Network (master, transmission –)
2	RXD+	Network (master, transmission +)
3	TXD–	Network (slave, transmission –)
4	TXD+	Network (slave, transmission +)
5	SHIELD	Shield

• Half-duplex communication



NO.	ID	FUNCTION, NOTES
1	NC	Unused
2	NC	Unused
3	TR–	Network
4	TR+	Network
5	SHIELD	Shield

■ I/O TERMINAL ASSIGNMENT

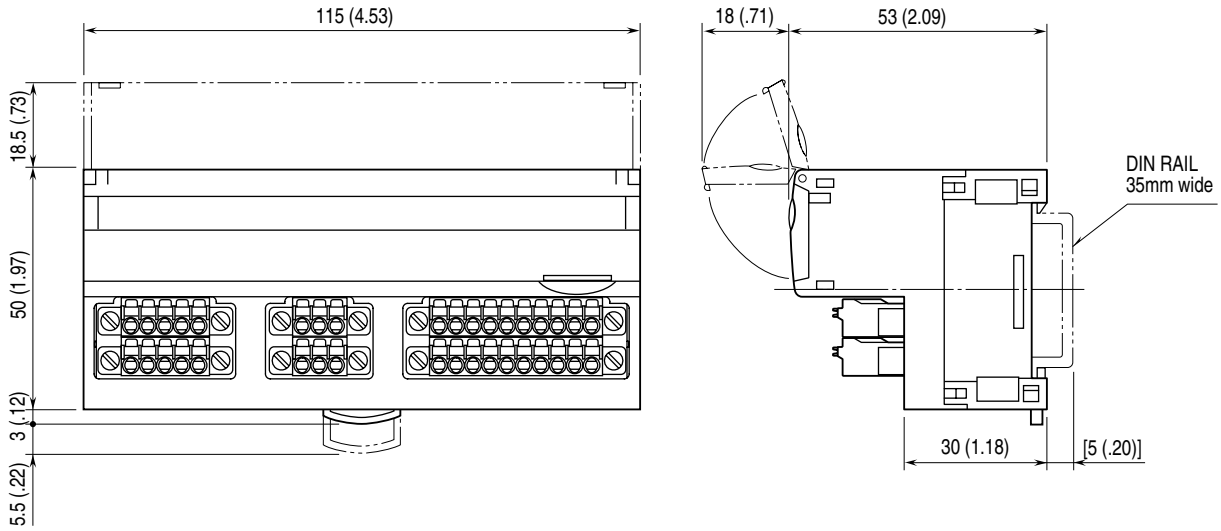
11 COM	12 X1	13 X3	14 X5	15 X7	16 Y1	17 Y3	18 Y5	19 Y7	20 +24V
1 COM	2 X0	3 X2	4 X4	5 X6	6 Y0	7 Y2	8 Y4	9 Y6	10 0V

NO.	ID	FUNCTION	NO.	ID	FUNCTION
1	COM	Input Common	11	COM	Input Common
2	X0	Input 0	12	X1	Input 1
3	X2	Input 2	13	X3	Input 3
4	X4	Input 4	14	X5	Input 5
5	X6	Input 6	15	X7	Input 7
6	Y0	Output 0	16	Y1	Output 1
7	Y2	Output 2	17	Y3	Output 3
8	Y4	Output 4	18	Y5	Output 5
9	Y6	Output 6	19	Y7	Output 7
10	0V	0V (Output common)	20	+24V	24V DC

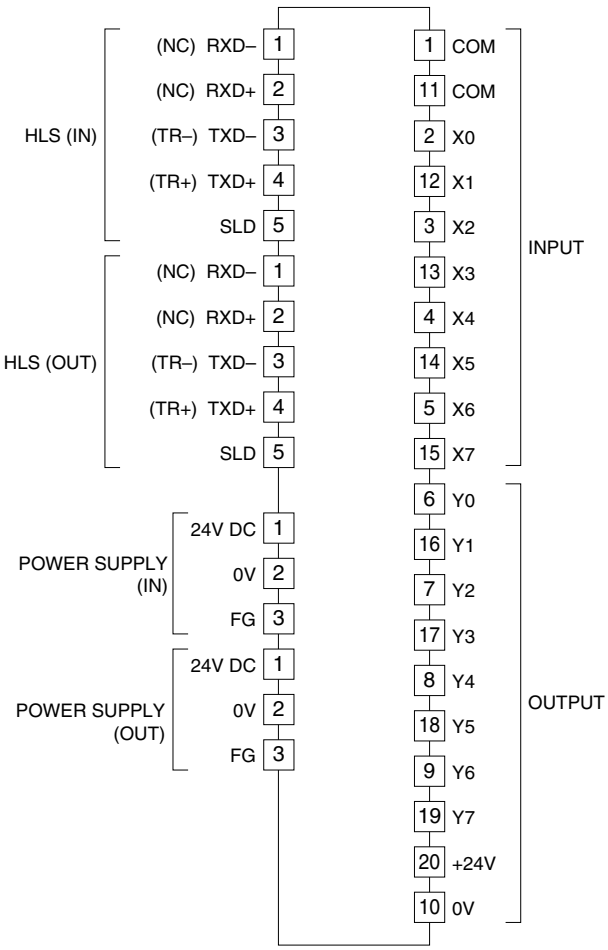
TERMINAL CONNECTIONS

Connect the unit as in the diagram below.

■ EXTERNAL DIMENSIONS unit: mm (inch)

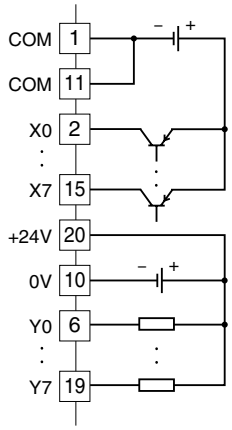


■ CONNECTION DIAGRAM

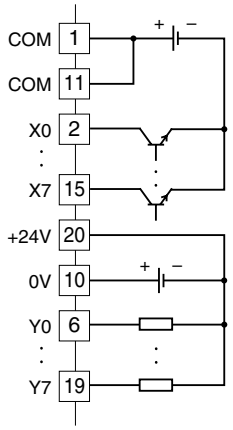


■ I/O Connection Example

PNP Input



NPN Input



Note 1: Terminal numbers in parentheses are for half-duplex communication model.
Note 2: In order to improve EMC performance, bond the FG terminal to ground.
Caution: FG terminal is NOT a protective conductor terminal.

WIRING INSTRUCTIONS

■ SOLDERLESS TERMINAL

Communication cables:

For ZHY262PS, ZHT262PS and ZHY262PBA: TUB-0.5
(Japan solderless Terminal MFG. Co., Ltd.)
For ZHY221PS: AI0,5-10WH (Phoenix Contact)

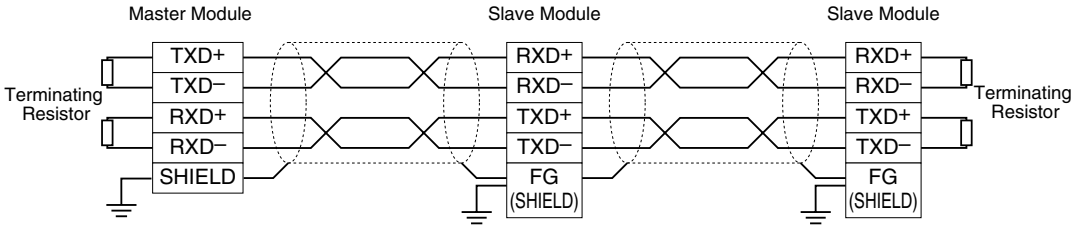
Others:

AI0,25-12BU 0.25 mm^2
AI0,34-12TQ 0.34 mm^2
AI0,5-10WH 0.5 mm^2
AI0,75-10GY 0.75 mm^2
A1-10 1.0 mm^2
A1,5-10 1.5 mm^2

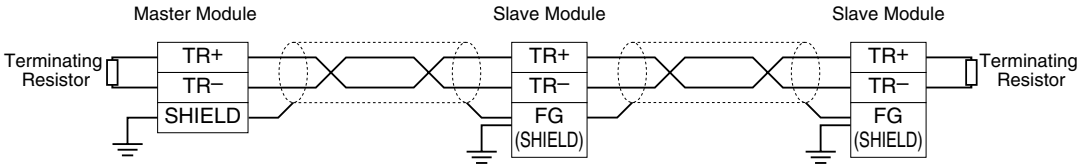
COMMUNICATION CABLE CONNECTIONS

■ MASTER CONNECTION

• Full-duplex communication



• Half-duplex communication

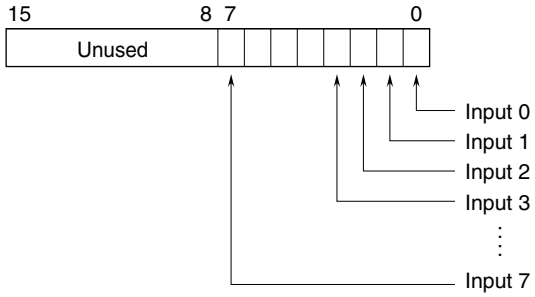


Note: Be sure to turn ON the switch of the terminating resistor located at both ends of the modules.

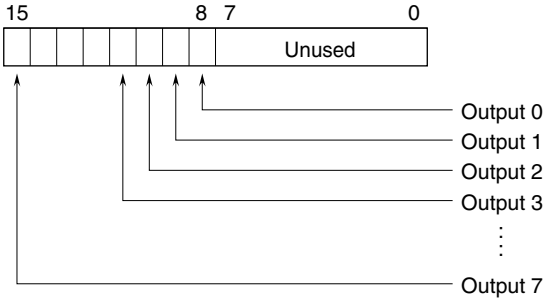
I/O DATA DESCRIPTIONS

■ DISCRETE I/O

• Di



• Do



0: OFF
1: ON